In 2009 Idaho National Laboratory awarded more than 40 grants to schools acoss Idaho to support projects that teach students about science, technology, engineering and math.

## INL classroom grants connect students with science

By Ryan Weeks and Marilyn Whitney , *INL Communications and Governmental Affairs*

Bonneville High School teacher Dale Walker hovers as students place samples of an animal heart tissue into the circular center of a boxlike contraption. One student closes the lid, starts the machine and waits as the tissue inside begins to spin.

***A $10,000 INL Lab Grant provided Kuna Middle School with chemistry equipment to help prepare students for more challenging STEM courses at the high school level.***

The contraption is an extraction centrifuge. As it turns, the heaviest parts of the tissue are pulled down, separating DNA from the rest of the cells.

"It's like when you put clothes in the washing machine," said Sarah Klepich, one of Walker's students.

For Walker, the centrifuge is a hands-on way to teach his biology students about genetics, since forensic scientists use such devices to extract DNA from materials found at crime scenes. He's long wanted to purchase one and was finally able to last year after receiving a $2,000 Mini Grant from Idaho National Laboratory.

***An INL Mini Grant provided technology and engineering students at Les Bois Junior High with new commercial grade tools for their STEM projects.***

"It's really cool because we actually get to see what we're studying," said Kevin Hoffman, another Bonneville High School student.

Walker was one of the 46 Idaho teachers awarded an INL Mini Grant in 2009.

The grants are funded by Battelle Energy Alliance, which operates INL. They are available to K-12 educators who "think outside the box" when it comes to teaching students about science, technology, engineering and math (STEM).

"We're really looking for innovation and creativity," said Anne Seifert, INL's STEM education coordinator.

Ted Simmons, another Bonneville High teacher, also received an INL Mini Grant in 2009.

He purchased a pinewood derby track to teach his students about physics. Their final project was to apply physics principles to design a pinewood derby car that would best the rest of the class.

"I've done pinewood derbies before, but now that I understand force and friction, I understand why it happens," said Nicholas Moffett, who designed the fastest car.

Other 2009 recipients used the grant money to develop lessons and curricula that integrated different subjects.

At Carberry Intermediate School in Emmett, Idaho, Vana Richards developed "Sound Off," a project on the science of sound.

Her fifth-grade Discovery Club students created musical instruments from beans, cans, rubber bands and other everyday items. They formed bands and composed short musical pieces, which they played on their instruments.

**Did you know?**

In 2009, INL contributed $473,000 to

To incorporate literature, Richards' students read poetry. They also used special microphones to graph the sounds of a voice, a piano and their handmade instruments. The project culminated with a competition among the bands. The top three finishers played with a

local and regional K-12 programs that promote science, technology, engineering and math (STEM) education and encourage students to pursue careers in these areas. That includes more than $100,000 distributed as 46 grants for Idaho STEM teachers.

real group, the Rewind Band, for their parents and classmates.

"My adult volunteers and I were amazed with the involvement and inventiveness of the students in designing instruments and creating their own band and voice music," Richards said. "The results were amazing music created through good teamwork."

Chris Taylor, a sixth-grade teacher at Boise's Liberty Elementary School, used his 2009 INL grant for a unit on rockets. His students learned the basic principles of rockets using the scientific method.

***Eagle Rock Junior High teacher Shelly Thiel used her INL Mini Grant to help pay for disadvantaged students to attend the Teton Science School, where students spent 3 days on a science field experience in Grand Teton National Park.***

In addition, Taylor integrated literature and language arts by having his students read Countdown, a novel by Ben Mikaelsen.

"My students were not only learning about space training and rockets, but also developing reading skills that focused on comprehension, making inferences and drawing conclusions for different parts of the story," Taylor said. "This novel was a great complement to the rocket unit and helped teach science through cross-curricular activities."

***Biology students at Bonneville High School use a DNA extraction centrifuge to learn about genetics.***

Taylor's approach yielded results. His students were assessed at the end of the unit on their knowledge of basic rocket principles and the scientific method. They visually showed an understanding of the design and problem-solving processes.

"All of my 28 students scored above average on this assessment," he said.

His students also performed better on Idaho's Direct Math Assessment. They scored higher in measurement, data analysis and basic problem-solving techniques, all of which they learned in the rocket unit.

INL created two new grants this year to better support this interwoven approach to learning.

The lab will still award $2,000 mini grants in 2010. But it also is funding two $10,000 "extreme classroom makeover" grants to schools that promote integrating several subjects into a lesson or unit.

"Teachers don't have to be in a lab to change the traditional learning environment," Seifert said. "The key to the makeover grant is involvement from multiple students and teachers with the resources to go across all disciplines."

**Additional Links:**
Learn more about applying for a grant.
See a list of all 2009 Eastern Idaho mini-grant recipients.
See a list of all 2009 Southern Idaho mini-grant recipients.
See a list of all 2009 Northern Idaho mini-grant recipients.

Feature Archive